

 <p>IIT PALAKKAD</p>	<p>भारतीय प्रौद्योगिकी संस्थान पालक्काड Indian Institute of Technology Palakkad अहलिआ एकीकृत कैम्पस, कोज़िहपारा Ahalia Integrated Campus, Kozhipara पालक्काड- 678557 Palakkad – 678 557</p>	<p>दूरभाषसंख्या/ Phone no: 04923 – 226 300/590/586</p> <p>ईमेल/ Email : purchase@iitpkd.ac.in</p>
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Prof. Job Kurian
Registrar i/c

Ref : Digital Storage Oscilloscope
Date : 15.12.2017

Open Tender No: IITKD/ELE/AA/084/2017

Due Date: **05.01.2018 @ 2.00 PM**

Dear Sir/Madam,

On behalf of the **Indian Institute of Technology, Temporary campus, Palakkad, Quotations are invited for “Digital Storage Oscilloscope, Desktop Linear Power Supply and Arbitrary Waveform Generator for General Electronics Laboratory”**. The Specifications are given in the Annexure.

Part A	Digital Storage Oscilloscope	42 Nos
Part B	Desktop Linear Power Supply	42 Nos
Part C	Arbitrary Waveform Generator	42 Nos

Technical bid Opening: The Technical bid will be opened on 05.01.2018 at 2.00 PM at Conference Room, Academic Block, IIT Palakkad.

Instructions to the Bidder

- (i) **Preparation of Bids:** - The tenders should be submitted **under two-bid system (i.e.) Technical bid and Financial bid in separate envelopes**. The technical bid should consist of all technical details along with commercial terms and conditions. No prices should be included in technical bid. Financial Bid should indicate item – wise prices for the items mentioned in the technical bid. The technical and the financial bids should be put in separate covers and sealed. Both sealed covers should be put into a bigger cover. **Bids must either be spiral bound / stapled together. No loose sheets will be accepted. All pages must be numbered.**
- (ii) The Quotations duly sealed and superscribed on the envelope **with the reference No. and due date, should be addressed to the undersigned so as to reach on or before the due date stipulated above.**
- (iii) **Delivery of the tender:** - The tender shall be sent to the below-mentioned address either by post or by courier so as to reach this office before the due date and time specified in the Schedule. The offer/bid can also be dropped in the tender box on or before the due

date and time specified in the schedule. **The tender box is kept in the office of the Academic Block, IIT Palakkad, Ahalia Integrated Campus, Kozhipara, Palakkad-678 557.**

- (iv) **Opening of the tender:** - The offer/Bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and will be examined by a technical committee which will decide the suitability of the bid as per our specifications and requirements. The bidders will be invited for opening of Technical bids. **The Bidder's representative should carry authorization letter from their company empowering them to participate in the Pre-bid and tender opening meetings.** In respect of opening of financial bid, those bidders who are technically qualified only will be called.
- (v) **Prices:** - The price should be quoted in nett per unit (after breakup) and must include all packing and delivery charges indicated separately for each item. **The price indicated should be CIF/CIP Kochi.** The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. The price should be quoted without custom duty. **The custom duty will be paid at concessional rate against duty exemption certificate.**
- (vi) **Agency Commission:** - Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. **Terms of Delivery:** - The item should be supplied to our Institute as per Purchase order. The installation and commissioning should be completed as specified **by us in the attached schedule.**
- (vii) **Acceptance & Rejection:** IIT Palakkad reserves the full right to accept / reject any tender at any stage without assigning any reason.

Yours sincerely,

Registrar, IIT Palakkad

SCHEDULE

Important Conditions:

- 1) The due date for the submission of the tender is **05.01.2018 @ 2.00 PM**
- 2) The offers / bids should be submitted in two-bids systems (i.e.) Technical bid and financial bid. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes (separately), transportation, packing & forwarding charges, installation, guarantee, payment terms, pricing terms etc.
- 3) The bidder may quote for one or more parts (Part A, Part B, Part C) of this tender document. Technical and Financial bid for each part must be enclosed in separate envelopes superscribed clearly as "Technical Bid" and "Financial bid" and sealed. Both the sealed covers should be put in a bigger cover. Open Tender for "**PART A/ PARTB/ PARTC of Digital Storage Oscilloscope, Desktop Linear Power Supply and Arbitrary Waveform Generator for General Electronics Laboratory**" should be written on the left side of the bigger cover and sealed.
- 4) The evaluation will be done for each part separately and purchase order will be given to the technically qualified bidder, who quotes the lowest price for the respective part. For each of the parts the technical evaluation will be done based on the mandatory requirements for that part mentioned in the specifications.
- 5) **EMD: -EMD should be at 2% (two percent) of the tender value quoted by the bidder. EMD for each part should be enclosed in the respective financial bid. The EMD should be enclosed with the financial bid which will not be opened for Technical evaluation. **Enclosing the EMD in the Technical bid will automatically DISQUALIFY the tenderer.****

EMD should be in the form of DD in favour of "**Indian Institute of Technology Palakkad**" and **payable at Palakkad**. The tender without EMD would be considered as UNSOLICITED and will be REJECTED. Photo/FAX copies of the Demand Draft/Banker's pay orders will not be accepted. No interest will be paid for the EMD and the EMD will be refunded to the successful bidder on receipt of Performance Security.

- 6) **Performance Security:-** The successful bidder will be asked to submit Performance Security for an amount of 5% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD or FD Receipt from the commercial bank or Bank Guarantee from any nationalized bank of India. **Only after submission of Performance Security, Purchase Order/Work Order will be released / L.C will be opened.**

7) Performance Security in the form of Bank Guarantee:- In case the successful bidder is a foreign company and wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed through the Beneficiary Bank to the end user bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee from a Nationalized Bank of India.

8) The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.

If an Indian agent is involved, the following documents must be enclosed:

(a) Foreign principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.

(b) Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.

9) The offer/bids should be sent only for a system or equipment that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.

10) Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid.

11) Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.

12) Validity: Validity of Quotation not less than 90 days from the due date of tender.

13) Delivery Schedule:- The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.

14) Risk Purchase Clause:- In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.

15) Payment:- No Advance payment will be made for Indigenous purchase. 100% Payment after supply and successful installation and commissioning and certification by the end user. In case of import supplies the payment will be made only through **100% Letter of Credit i.e. (50% payment will be released against shipping documents and 50% after successful installation and meeting acceptance criteria wherever the installation is being done).**

16) On-site Installation: - The equipment or machinery has to be installed and commissioned by the successful bidder within 15 to 20 days from the date of receipt of the **item at site of IIT Palakkad.**

17) Warranty/Guarantee: - The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately. (For more details please refer our Technical Specifications).

18) Late offer: - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.

19) Loading and unloading charges will be borne by the bidder/Supplier.

20) Acceptance and Rejection: - I.I.T. Palakkad has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

21) Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.

22) Disputes and Jurisdiction: - Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Palakkad in Kerala.

23) All Amendments, time extension, clarifications etc., will be uploaded on the institute website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

Acknowledgement:- It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE**

Technical Specifications for Digital Storage Oscilloscope, Desktop Linear Power Supply and Arbitrary Waveform Generator for General Electronics Laboratory

Part A	Digital Storage Oscilloscope – 42 Nos.
Part B	Desktop Linear Power Supply – 42 Nos.
Part C	Arbitrary Waveform Generator – 42 Nos.

The bidder may quote for one or more parts (Part A, Part B, Part C). Technical and Financial bid for each part must be enclosed in separate envelopes. EMD for each part should be enclosed in the respective financial bid. All the financial and technical bids must be put in one big envelope and delivered to the purchase section. The evaluation will be done for each part separately and purchase order will be given to the technically qualified bidder, who quotes the lowest price for the respective part. For each of the parts the technical evaluation will be done based on the mandatory requirements for that part mentioned in the specifications.

IMPORTANT : Enclosing EMD or mentioning value of EMD in technical bid will lead to immediate disqualification.

IIT Palakkad reserves the right to request for a demonstration, if required, of compliance w.r.t to technical specifications. Such a demonstration will be conducted in the Temporary Campus of IIT Palakkad, Ahalia Integrated Campus, Palakkad. The expenses for this demonstration will have to borne by the bidder.

Part A : Digital Storage Oscilloscope – 42 Nos.

Sl. No.	Parameter	Specification
1.	Bandwidth	100 MHz or more
2.	Number of channels	(a) At least 2 analog channels (b) At least 1 digital channel
3.	Max Sampling rate	At least 2 GSamples / sec
4.	Record Length	At least 1M points
5.	Segmented Memory	Compulsory
6.	Waveform update rate	> 40000 time per second
7.	Vertical Resolution	At least 8 bits
8.	Vertical Range	At least 500 uV/div (or lower) – 10 V/div (or more)
9.	Vertical Control Knobs	Dedicated controls per channel
10.	Time base range	From 10 ns/div (or lower) to 25s/div (or more)
11.	Trigger Source	Ch1, Ch2 and External
12.	Trigger Type	Edge, Pulse, Video and Pattern
13.	Display	Colour Screen TFT display. At least 6" diagonal.
14.	Display Modes	(a) YT (b) XY (c) Persistence mode (d) Digital Phospor OR Intensity Gradation
15.	Math Functions	(a) FFT (b) CH1 + CH2, CH1 – CH2, CH1 * CH2, low pass filter
16.	Acquisition Modes	(a) Normal (b) Peak Detect

		(c) Averaging mode
17.	Serial Decode Capability	(a) Mandatory : UART / RS232, I2C, SPI (b) Optional : CAN & LIN Bus Protocols. Price must for this option must be included as a separate item
18.	Frequency Analysis Capability	(a) Phase and Magnitude Analysis vs. Frequency upto 20 MHz must be supported. Magnitude Analysis must be plotted in dB. (b) Sinusoidal signal for Frequency analysis must be generated internally.
19.	Interface with PC	(a) USB. (b) Software to connect with oscilloscope must be provided.
20.	Power	230V 50Hz operation with Indian Plug
21.	Probes	Must be supplied with 1:1 and 10:1 probes. Switchable probes acceptable.
22.	Warranty	Minimum 5 years

Part B : Desktop Linear Power Supply – 42 Nos.

Sl. No.	Parameter	Specification
1.	Outputs	(a) <i>Output 1</i> : 0 – 32 V (or higher) 0 – 2 A (or higher) (b) <i>Output 2</i> : 4.5 V (or lower) -- 5.5 V (or higher) 5 A (or higher) (c) <i>Output 3</i> : Tracking supply with + / 0 / – output. Magnitude : 14 V (or lower) – 15 V (or higher) 0.5 A (or higher) (d) The three outputs above must be electrically isolated.
2.	Operating Temperature	0 – 50 deg C (or higher)
3.	Output 1	
	(a) Mode of Operation	Constant Voltage (CV) and Constant Current (CC)
	(b) Line Regulation (CV)	Within +/- 0.02% +/- 4 mV (for 10% change in input voltage at constant rated load)
	(c) Load Regulation(CV)	Within +/- 0.02% +/- 4 mV
	(d) Output Ripple (CV)	Within 2 mV rms
	(e) Line Regulation (CC)	Within +/- 0.2% +/- 500 uA (for 10% change in input voltage at constant rated load)
	(f) Load Regulation (CC)	Within +/- 0.2% +/- 500uA
	(g) Output Ripple (CC)	Within +/- 0.1 % rms
	(h) Overload Protection	Current Limit type
	(i) Display	(At least) 3 digit Digital Panel Meter to show V and I
4.	Output 2	
	(a) Mode of Operation	Constant Voltage (CV)
	(b) Line Regulation (CV)	Within +/- 0.2% (for 10% change in input voltage at constant rated load)
	(c) Load Regulation(CV)	Within +/- 0.2%
	(d) Output Ripple (CV)	Within 2 mV rms
	(h) Overload Protection	Short circuit protection
	(i) Display	(At least) 3 digit Digital Panel Meter to show V and (optionally) I

5.	Output 3	
	(a) Mode of Operation	Constant Voltage (CV)
	(b) Line Regulation (CV)	Within +/- 0.2% (for 10% change in input voltage at constant rated load)
	(c) Load Regulation(CV)	Within +/- 0.2%
	(d) Output Ripple (CV)	Within 2 mV rms
	(h) Overload Protection	Short circuit protection
	(i) Display	(At least) 3 digit Digital Panel Meter to show V and (optionally) I
6.	Warranty	Minimum 3 years

Part C : Arbitrary Waveform Generator – 42 Nos.

Sl. No.	Parameter	Specification		
1.	Number of Channels	At least 2.		
<i>Note that all the parameters specified below apply to all channels.</i>				
2.	Built-in waveforms	Sine, Square, Pulse, Ramp, Noise and frequently used Arbitrary waveforms		
3.	User Defined Waveforms	At least 750 k Points		
4.	Sampling Rate	250 M Samples/sec or higher		
5.	Frequency Resolution	1 uHz (12 digits) or better		
6.	Frequency Range	(a) Sine	Upto 50 MHz (or higher)	
		(b) Square	Upto 25 MHz (or higher)	
		(c) Pulse	Upto 25 MHz (or higher)	
		(d) Ramp	Upto 1 MHz (or higher)	
		(e) Noise	Upto 50 MHz (or higher)	
		(f) Arbitrary	Upto 25 MHz (or higher)	
7.	Amplitude Resolution	14 bits (or higher)		
8.	Amplitude Range	(a) 50 ohm load	(i) 1 mVp-p to 10 Vp-p (or higher) upto 25 MHz (or higher) (ii) 1 mVp-p to 5 Vp-p (or higher) for frequencies greater than in (i) above.	
		(b) High Z load	(i) 2 mVp-p to 20 Vp-p (or higher) upto 25 MHz (or higher) (ii) 2 mVp-p to 10 Vp-p (or higher) for frequencies greater than in (i) above.	
		(c) Accuracy	Within $\pm(1\%$ of setting +2 mVp-p)	
9.	Offset Range	(a) 50 ohm load	At least $\pm (5V - Vp-p / 2)$	
		(b) High Z load	At least $\pm (10V - Vp-p / 2)$	
10.	Phase	Should be able to vary the phase from 0-180 deg between the two channels.		
11.	Modulation	(a) Amplitude Modulation	(i) Carrier Waveforms	Sine, Square
			(ii) Source	Internal & External
			(iii) Internal Modulating Waveforms	Sine, Square, Ramp
			(iv) Signal Frequency	Upto 20 kHz (or more)
			(v) Depth	0% to 100%

		(b) Frequency Modulation	(i) Carrier Waveforms	Sine, Square
			(ii) Source	Internal & External
			(iii) Internal Modulating Waveforms	Sine, Square, Ramp
			(iv) Signal Frequency	Upto 20 kHz (or more)
			(v) Frequency Deviation	Upto 25 MHz (or more)
		(c) Phase Modulation	(i) Carrier Waveforms	Sine, Square
			(ii) Source	Internal & External
			(iii) Internal Modulating Waveforms	Sine, Square, Ramp
			(iv) Signal Frequency	Upto 20 kHz (or more)
			(v) Phase Deviation	0 deg to 180 deg
		(d) Amplitude Shift Keying	(i) Carrier Waveforms	Sine, Square
			(ii) Source	Internal & External
			(iii) Modulation Rate	Upto 100 kHz or more
		(e) Frequency Shift Keying	(i) Carrier Waveforms	Sine, Square
			(ii) Source	Internal & External
			(iii) Modulation Rate	Upto 100 kHz or more
		(f) Phase Shift Keying	(i) Carrier Waveforms	Sine, Square
			(ii) Source	Internal & External
			(iii) Modulation Rate	Upto 100 kHz or more
		(g) Pulse Width Modulation	(i) Carrier Waveforms	Pulse
			(ii) Source	Internal & External
			(iii) Internal Modulating waveforms	Sine, Square
			(iv) PWM frequency	Upto 10 kHz or more
			(v) Deviation	Upto 50 % of pulse period
12.	Sweep	(a) Waveform	Sine, Square, Ramp	
		(b) Sweep Type	Linear & Log	
		(c) Sweep Quantity	Frequency	
		(d) Range	1 uHz to maximum frequency	
		(e) Trigger Source	Internal & External	
13.	System Characteristics	(a) Store/Recall	At least 10 groups of setting memory	
		(b) Interface	USB with ability to define arbitrary waveform on PC (All required software should be provided).	
		(c) Display	LCD	
		(d) Signal Protection	Should be able to handle short/overload automatically	
14.	Accessories	Should provide 50Ω through termination.		
15.	Warranty	Minimum 5 years		

Who can participate in the bid?

Only those bidders fulfilling the following criteria should respond to the tender.

1. The bidder should be either an Original Equipment Manufacturer (OEM) of Electronics Test Equipment or should be an authorized representative (provide documentary proof) of an OEM.
2. The bidder should be a company registered under the Companies Act, 1956/2013 OR a Limited Liability Partnership /a registered partnership firm OR a sole-proprietorship entity. Appropriate Registration incorporation certificate must be submitted.
3. The bidder must have a registered office in Karnataka/Tamil Nadu/Telangana/Andhra Pradesh/Maharashtra or Kerala. Certificate of registration for the offices to be provided.
4. The bidder must also have a service center in Karnataka/Tamil Nadu/ Telangana/Andhra Pradesh or Kerala. Certificate of registration for the centers to be provided. Details about scope of service activities provided by the service centres must be provided. The contact details of the service engineers must be provided.
5. The bidder must be in existence in the business of Electronics Test Equipment or allied fields for a minimum period of 5 previous financial years (before or since 01 April 2012). Documentary evidences of experience must be provided.
6. The bidder must provide detailed specification of each equipment/item. Model numbers, data sheets and brochures must be included for each quoted equipment/accessories/item. Specifications corresponding to quoted model number must be available publicly via OEM's website for scrutiny. If not, bid can be disqualified on technical grounds.
- 7. Compliance sheet for the technical specification and OEM Brochure have to be attached along with the Technical bid. Vendor has to fill the compliance sheet and mention page number or reference number in OEM brochure. Unfilled / partially filled sheets lead to disqualification.**